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UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF CALIFORNIA
SAN DIEGO DIVISION

ODYSSEY WIRELESS, INC.,

Plaintiff,

v.

APPLE INC.,

Defendant.

Case No. 3:15-CV-01735-H-RBB

**DEFENDANTS' OPENING CLAIM
CONSTRUCTION BRIEF**

Date: March 29, 2016

Time: 9:00 a.m.

Ctrm: 15A

Judge: Hon. Marilyn Huff

ODYSSEY WIRELESS, INC.,

Plaintiff,

v.

SAMSUNG ELECTRONICS CO.,
LTD, et al.,

Defendants.

Case No. 3:15-cv-01738-H-RBB

1 ODYSSEY WIRELESS, INC.,
2 Plaintiff,
3 v.
4 MOTOROLA MOBILITY LLC,
5 Defendant.

Case No. 3:15-cv-01741-H-RBB

6 ODYSSEY WIRELESS, INC.,
7 Plaintiff,
8 v.
9 LG ELECTRONICS, INC., et al.,
10 Defendants.

Case No. 3:15-cv-01743-H-RBB

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TABLE OF EXHIBITS

Ex.	Abbrev.	Exhibit
1	'393 Patent	U.S. Patent No. 7,881,393 (issued Feb. 1, 2011)
2	'837 Patent	U.S. Patent No. 8,199,837 (issued June 12, 2012)
3	'940 Patent	U.S. Patent No. 8,576,940 (issued Nov. 5, 2013)
4	'169 Patent	U.S. Patent No. 8,660,169 (issued Feb. 25, 2014)
5	'230 Patent	U.S. Patent No. 8,855,230 (issued Oct. 7, 2014)
6	'606 Patent	U.S. Patent No. 8,879,606 (issued Nov. 4, 2014)
7	'393 File History	File history for the '393 patent (excerpts)
8	'837 File History	File history for the '837 patent (excerpts)
9	'940 File History	File history for the '940 patent (excerpts)
10	'169 File History	File history for the '169 patent (excerpts)
11	'230 File History	File history for the '230 patent (excerpts)
12	'606 File History	File history for the '606 patent (excerpts)
13	'115 File History	File history for U.S. Application No. 11/720,115, which issued as U.S. Patent No. 8,050,337
14	'354 File History	File history for U.S. Application No. 12/372,354, which issued as U.S. Patent No. 7,876,845
15	EICES SBIR Response	Response of EICES Research, Inc. to: Air Force Topic AF131-049 of SBIR Program Solicitation FY 13.1
16	EICES Proposal D052-019	EICES Research, Inc., Robust Communications for Low Probability of Intercept (LPI), Low Probability of Detection (LPD) and Low Probability of Exploitation (LPE) of Communications Information, Proposal No. D052-019-0085
17	Acampora Decl.	Declaration of Anthony Acampora, Ph.D., Regarding Claim Construction (filed concurrently), including Exhibits A through C

I. INTRODUCTION

The six patents-in-suit address a narrow alleged invention. The inventor, Peter D. Karabinis, was concerned that a “sophisticated interceptor” could use the periodic characteristics of certain wireless signals to detect that the signals were man-made and thus might be of interest. (‘393 patent, 19:55-20:15.) Operating under the name EICES Research, Karabinis attempted to develop a covert communications system for the military by using waveforms with specific, non-periodic characteristics he believed would make them harder to detect.

Although the military was not interested in the idea, EICES learned of the cellular industry’s work on the 4th Generation (“4G”) standard called “LTE” (“Long Term Evolution”). EICES played no role in developing LTE, and the purported invention has no relevance to commercial cellular products, which are based on periodic features and use encryption, not covertness, to protect signals. Nevertheless, EICES claimed to have accidentally invented a portion of LTE related to the “uplink” or “return link.” After changing its name to Odyssey Wireless during this litigation, Plaintiff now generally accuses LTE uplink functionality in Defendants’ cellular products.

Odyssey proposes a “plain and ordinary meaning” construction for every term in each of the 140 asserted claims. Contrary to Federal Circuit case law, Odyssey’s proposal seeks to shift the parties’ dispute over claim meaning to arguments at a trial before a jury and, ultimately, to untether the claim scope from the alleged invention described in the patents. In contrast, Defendants’ proposed constructions are well-grounded in the intrinsic record and should be adopted.

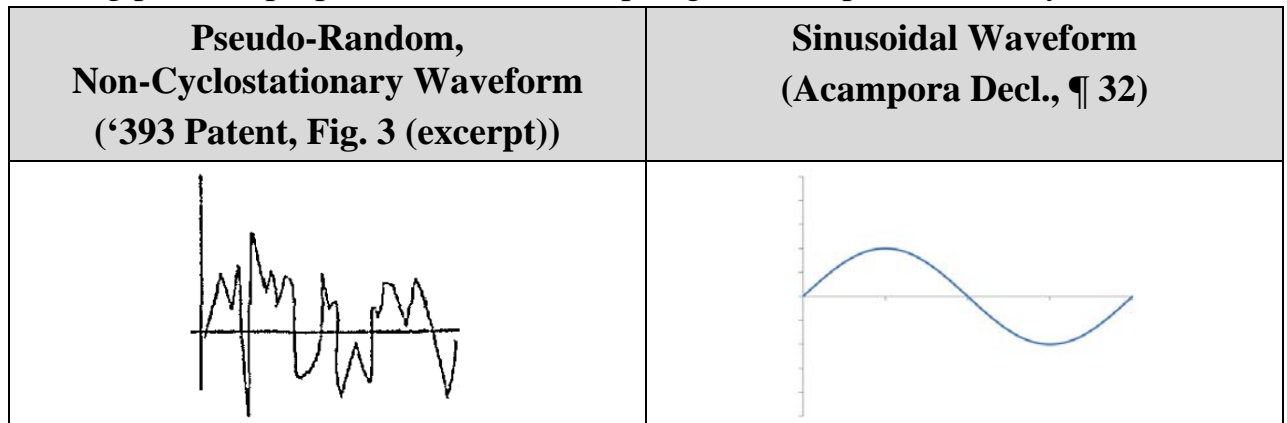
II. FACTUAL BACKGROUND

The alleged invention in the patents-in-suit “relates to low interference, high privacy, featureless covert communications systems.”¹ (‘393 patent, 1:40-54;

¹ As the patents-in-suit share many disclosures, the citations to the ‘393 patent in

1 Acampora Decl., ¶¶ 74-76.) The patents state that “conventional communications
2 systems” send signals with periodic characteristics – called “cyclostationary”
3 signatures – that a “sophisticated interceptor” could supposedly detect using a
4 “cyclic periodogram.” (*Id.*, 19:1-25, 19:55-20:15.)

5 To make signals harder to detect, the patents use a “signaling alphabet” with
6 waveforms that do not have those periodic characteristics. (*Id.*, 2:16-43.)
7 Specifically, the patents use a set of waveforms that are each “Pseudo-Random,”
8 “Non-Cyclostationary,” and “Orthonormal.”² (*E.g., id.*, Fig. 1.) A detailed tutorial
9 regarding those concepts is provided in the Acampora Declaration. (Acampora
10 Decl., ¶¶ 22-73) As an example, the figure below and left shows a pseudo-random,
11 non-cyclostationary waveform that may be used in creating the patents’ signaling
12 alphabet. In contrast, the figure below and right shows a sinusoidal waveform
13 having periodic properties like those disparaged in the patents as easy to detect.³



21 Some of the claims also add well-known features onto the patents’ signaling
22 alphabet. For example, some claims create the alphabet in a way that attempts to

23 this section are representative across the patents. (Acampora Decl., ¶¶ 78-79.)

24 ² For brevity, this brief uses the term “orthonormal” to mean “orthogonal and/or
25 orthonormal.” (*See* Acampora Decl., ¶¶ 40-41 (describing meaning of “orthogonal”
and “orthonormal”).)

26 ³ As discussed below, the patents use specific, coined terminology to refer to the
27 signaling alphabet, defining the signaling alphabet as “{U(nT)},” an element of the
28 signaling alphabet as “U(nT),” and specific elements of the signaling alphabet by
number as “U₁(nT),” “U₂(nT),” through “U_M(nT).”

address potential interference from “incumbent users,” while still maintaining the covertness of the signals. (‘393 patent, 29:14-27, 29:33-52.) Those claims apply an old technique called “water filling,” which allocates more transmission power to frequencies detected to have less interference and less transmission power to frequencies detected to have more interference.⁴ (Acampora Decl., ¶¶ 52-67.)

As shown in Figure 17, the “Power Spectrum Estimator” (in brown) calculates the level of interference from other transmitters, the “Water Filling Spectrum Shaping” step (in blue) creates a “Desired Spectrum Shape” by allocating more power to frequencies with low measured interference, and the remaining three colored blocks (in yellow) convert the desired spectrum shape into waveforms with the patents’ specific pseudo-random, non-cyclostationary, and orthonormal characteristics. (‘393 patent, Fig. 17, 30:5-23; Acampora Decl., ¶¶ 164-75.)

‘393 Patent, Fig. 17 (annotated) (Acampora Decl., ¶ 164)

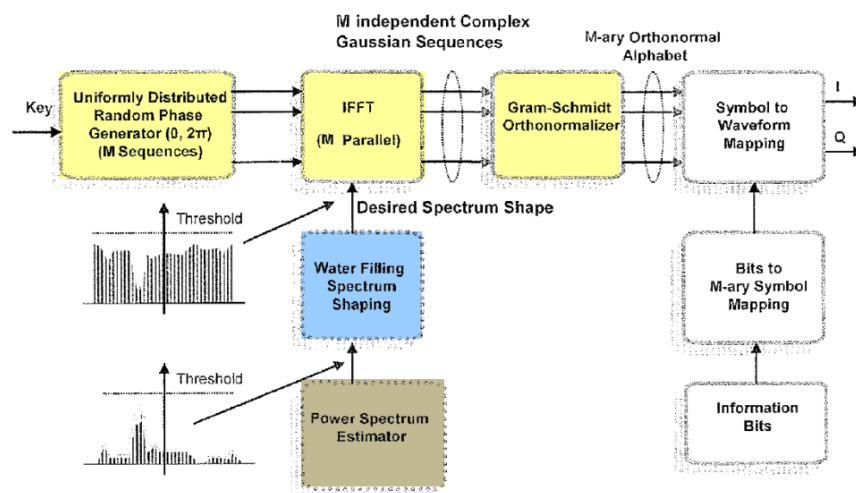


FIGURE 17

The prosecution histories also emphasize the patents’ alleged invention of waveforms with these specific characteristics. In 2005, EICES filed its first applications relating to the signaling alphabet. While prosecuting a parent application to which each patent-in-suit claims priority, EICES distinguished the

⁴ EICES named this method the “neXt Generation (XG) Chipless Spread-Spectrum Communications (CSSC) System” or “XG-CSSC.” (‘393 patent, 29:14-22.)

1 alleged invention as a whole from the prior art, emphasizing the pseudo-random
 2 characteristic of its signaling alphabet. (*E.g.*, ‘115 File History,
 3 ODY_DEFS_00000311 (“The concept of using a pseudo-randomly generated
 4 alphabet that comprises a plurality of waveform elements is simply foreign and
 5 goes against the grain of conventional communication systems.”); Acampora Decl.,
 6 ¶¶ 109-17.) EICES also distinguished its alleged invention from “conventional
 7 communication systems,” such as GSM (a 2G cellular technology), CDMA (a 2G
 8 and 3G cellular technology), and OFDM (a 4G cellular technology). (*Id.* at
 9 ODY_DEFS_00000300 (“[A] GSM system or a CDMA system uses a
 10 communications alphabet whose elements are predetermined constellation points,
 11 NOT pseudo-random waveform elements”); *id.* at ODY_DEFS_00000312
 12 (distinguishing performance of the alleged invention from OFDM).)

13 In 2008, EICES filed its first application relating to the use of water-filling in
 14 creating the signaling alphabet. While prosecuting another parent application,
 15 EICES again distinguished its alleged invention as a whole from conventional
 16 systems like OFDM. (Acampora Decl., ¶¶ 118-21.) EICES argued, for example,
 17 that using a mathematical operator called an “IFFT” to “modulat[e] data bits onto
 18 OFDM subcarriers” has “*nothing to do with* the formation of a communications
 19 alphabet.” (‘354 File History, ODY_DEFS_00000958 (emphasis added).)

20 Despite repeatedly distinguishing the alleged invention from commercial
 21 cellular technologies, EICES announced in 2010 that certain “claims may apply to
 22 the return link of [an LTE] communication system.” (‘393 File History,
 23 ODY0000195.) EICES did not tell the Patent Office what part of the LTE “return
 24 link” the claims allegedly related to, nothing in the record supports EICES’
 25 statement, and the Patent Office did not comment on EICES’ assertions about LTE.

26 In 2014, Plaintiff sued Defendants based on sales of smartphones compatible
 27 with LTE networks and now asserts 140 claims from six patents, accusing systems
 28 that have no relationship to its alleged invention but instead have the same features

it expressly distinguished in the intrinsic record. To try to read its claims on Defendants' products, Odyssey proposes constructions completely divorced from the alleged invention described in the patents.

III. DISPUTED CLAIM TERMS

A. "U(nT)" (Term 14) – Claims of All Patents-in-Suit

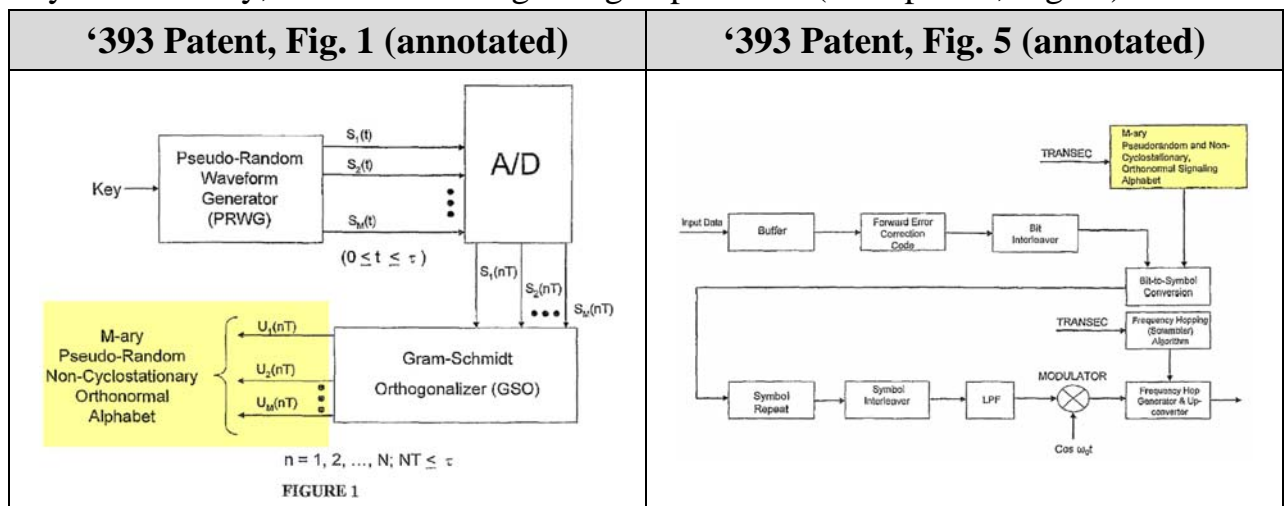
Defendants' Construction	Plaintiff's Construction
"a waveform within a set of discrete-time, pseudo-random non-cyclostationary and orthogonal and/or orthonormal waveforms that define a waveform alphabet"	Odyssey maintains that no construction is necessary for this term. This claim term should be afforded its plain and ordinary meaning. However, should the Court decide to construe this term, then Odyssey proposes the following construction: "a discrete time-domain waveform, wherein n denotes a discrete time index of the discrete time-domain waveform"

Odyssey proposes a "plain meaning" construction for "U(nT)," but the term does not have a plain and ordinary meaning. Instead, "U(nT)" is a coined term defined in the patents. (Acampora Decl., ¶¶ 81-82.)

Odyssey's "plain meaning" proposal contradicts Federal Circuit law. "When the parties raise an actual dispute regarding the proper scope of [the] claims, the court, not the jury, must resolve the dispute." *O2 Micro Int'l v. Beyond Innovation Tech.*, 521 F.3d 1351, 1360 (Fed. Cir. 2008). Moreover, when a claim uses a coined mathematical term like U(nT) that lacks a customary meaning, the specification provides the meaning. *Honeywell Int'l v. Universal Avionics Sys.*, 488 F.3d 982, 991 (Fed. Cir. 2007) ("Without a customary meaning of a term within the art, the specification usually supplies the best context for deciphering claim meaning.").⁵

⁵ See also, e.g., *Network Commerce v. Microsoft*, 422 F.3d 1353, 1359-1360 (Fed. Cir. 2005) (term with "no commonly understood meaning" construed in "light of

Here, “ $U(nT)$ ” does not cover every possible type of waveform. Instead, the specification expressly defines $U(nT)$ as a discrete-time waveform with particular characteristics, and consistently and repeatedly refers to those characteristics. (Acampora Decl., ¶¶ 85-107.) Figure 1 and the accompanying text define the set of $U(nT)$ waveforms as an “M-ary Pseudo-Random Non-Cyclostationary Orthonormal Alphabet.” (‘393 patent, Fig. 1, 20:21-21:52.) They likewise expressly equate the set of $U(nT)$ elements with the set of numbered pre-generated waveform elements: “ $\{U(nT)\} = \{U_1(nT), U_2(nT), \dots, U_M(nT)\}$.” (*Id.*, 21:43-46, Fig. 1; Acampora Decl., ¶ 95 (“ $\{\}$ ” is standard notation for a set of elements).) Figure 5 likewise describes the patents’ signaling alphabet as an “M-ary Pseudorandom and Non-Cyclostationary, Orthonormal Signaling Alphabet.” (‘393 patent, Fig. 5.)



Similarly, the text accompanying Figure 17 states: “The set of orthonormal waveforms $\{U_1(nT), U_2(nT), \dots, U_M(nT)\}$ may be used to define an M-ary orthonormal Gaussian-distributed signaling alphabet.” (*Id.*, 30:45-47, Fig. 17; *id.*, 2:27-28 (“for example, Gaussian-distributed pseudo-random noise”), 2:53-55 (discussing Gaussian and Rayleigh distributions).)

Thus, the patents make clear that the claimed “ $U(nT)$ ” waveform must have the specification”); *J.T. Eaton & Co. v. Atl. Paste & Glue*, 106 F.3d 1563, 1570 (Fed. Cir. 1997) (when a term is “unknown to those of ordinary skill in the art,” it falls “to the applicants, as a duty, to provide a precise definition”).

1 these particular characteristics, which are critical to the alleged invention.

2 The prosecution histories further support Defendants' construction.
 3 (Acampora Decl., ¶¶ 108-22.) While prosecuting the '115 application, a parent to
 4 the patents-in-suit, EICES described the prior art systems as using
 5 "deterministically predetermined" and "invariant" point constellations. ('115 File
 6 History, ODY_DEFS_00000299-300, 311.) EICES explained that, in contrast, the
 7 purported invention as a whole used waveforms with specific characteristics, *i.e.*,
 8 pseudo-random, non-cyclostationary, and orthonormal waveforms. (*E.g.*, *id.* at
 9 ODY_DEFS_00000311 ("The concept of using a pseudo-randomly generated
 10 alphabet that comprises a plurality of waveform elements is simply foreign and
 11 goes against the grain of conventional communication systems.").)

12 EICES also highlighted the specific characteristics of its signaling alphabet
 13 while prosecuting another parent application, the '354 application:

14 *What are the characteristics of this alphabet?* First, each
 15 member thereof is a waveform that is *pseudo-randomly*
 16 generated due to the pseudo-random assignment of the
 17 phase components associated therewith. Moreover, at
 18 least two of these pseudo-random waveforms are
 19 *orthogonal* to one another due to the orthogonalizing....
 20 The pseudo-random waveforms have *reduced*
 21 *cyclostationarity* because they do not include any
 22 repetitive/periodic feature.

23 ('354 File History, ODY_DEFS_00000953 (emphasis added).)

24 In short, these specific characteristics included in the patents' definition of
 25 "U(nT)," and omitted by Odyssey, are necessary to accomplish the purpose of the
 26 alleged invention. As discussed above, to create a system with "extreme privacy,"
 27 Odyssey proposed using "waveforms that are *devoid of ... any cyclostationary*
 28 *signature.*" ('393 patent, 29:14-27 (emphasis added); *id.*, 1:40-54 ("This invention
 relates to low interference, high privacy, featureless covert communication systems
"); *id.*, 18:50-19:25 (describing detectability of periodic features of signals sent

1 by ordinary commercial systems); Acampora Decl., ¶¶ 74-76, 85-124.) Removing
 2 the specific characteristics from the definition of “U(nT)” would defeat the very
 3 purpose of Odyssey’s alleged invention and contradicts Federal Circuit law.
 4 *On Demand Mach. v. Ingram Indus.*, 442 F.3d 1331, 1340 (Fed. Cir. 2006)
 5 (adopting scope “described as the advantage and distinction of the invention”).⁶
 6 Moreover, reading out the specific waveform characteristics that allegedly
 7 distinguished it over the prior art would render the claims invalid under 35 U.S.C.
 8 § 112. *Abbott Labs v. Sandoz*, 566 F.3d 1282, 1288 (Fed. Cir. 2009) (“[T]he claims
 9 cannot enlarge what is patented beyond what the inventor has described as the
 10 invention.”) (internal quotation omitted).⁷

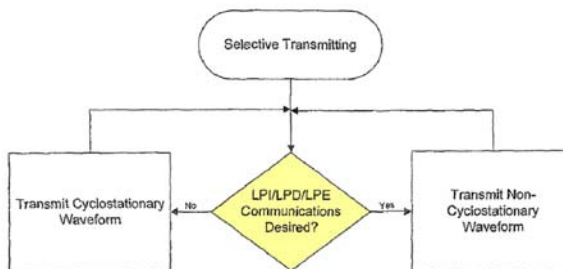
11 Odyssey ignores the relevant intrinsic evidence and prosecution history,
 12 citing Figure 16 and the accompanying text instead. (Dkt. 144, Ex. A at 37 (citing
 13 ‘393 patent, 28:6-21, Fig. 16); Acampora Decl., ¶¶ 106-07.) Figure 16 does not use
 14 the term U(nT) and provides no support for Odyssey’s efforts to read out the
 15 waveform characteristics from the definition of “U(nT).” Figure 16 instead refers
 16 to a *dual-mode* “Selective Transmitting” device, which includes (1) a mode using
 17 covert Low Probability of Intercept/Low Probability of Detection/Low Probability
 18 of Exploitation (*i.e.*, LPI/LPD/LPE) communications and (2) a conventional mode.
 19 (‘393 patent, Fig. 16, 1:40-54, 28:6-21.) If the user desires covert communications,
 20

21 ⁶ *Retractable Techs. v. Becton, Dickinson & Co.*, 653 F.3d 1296, 1305 (Fed. Cir.
 22 2011) (court is “required to tether the claims to what the specifications indicate the
 23 inventor actually invented”); *Phillips v. AWH*, 415 F.3d 1303, 1316 (Fed. Cir.
 24 2005) (en banc) (claims construed based on “what the inventors actually invented”).

25 ⁷ Section 112 requires that a patent describe and enable the “full scope” of the
 26 claimed invention. *E.g.*, *Liebel-Flarsheim v. Medrad*, 481 F.3d 1371, 1379-80
 27 (Fed. Cir. 2007). Here, the patents describe only the use of waveforms with
 28 specific characteristics, and any construction that enlarges the scope of “U(nT)”
 beyond those characteristics would render the claims invalid. *Id.* at 1380 (claims
 found invalid after patentee “pressed to have” broad claims: “The motto, ‘beware of
 what one asks for,’ might be applicable here.”).

1 then non-cyclostationary waveforms are used; otherwise, conventional,
 2 cyclostationary waveforms are used. Nothing in Figure 16 suggests that the alleged
 3 invention could cover a *single-mode* device using only cyclostationary waveforms.
 4 (E.g., *id.*, 28:18-21 (“[A] given system ... can operate in one of *two modes*,
 5 depending on whether LPI/LPD/LPE communications are desired.”) (emphasis
 6 added).)

7 **‘393 Patent, Fig. 16 (annotated)**



13 Finally, Odyssey proposes in the alternative that $U(nT)$ be defined as “a
 14 discrete time-domain waveform, wherein n denotes a discrete time index of the
 15 discrete time-domain waveform.” (Dkt. 144, Ex. A at 37.) The parties agree that
 16 $U(nT)$ must be discrete time, but Odyssey’s proposal would improperly read out the
 17 other characteristics, which Odyssey itself attributed to $U(nT)$ and then repeatedly
 18 used to distinguish the claimed waveforms from the prior art. *On Demand Mach.*,
 19 442 F.3d at 1340. In addition, Odyssey’s proposal simply repeats language already
 20 in the claim:

21 generating a *discrete time-domain* waveform $U(nT)$;
 22 wherein n denotes a discrete time index of $U(nT)$, wherein
 $n=1, 2, \dots, N \dots$

23 (E.g., ‘393 patent, claim 1 (emphasis added); Acampora Decl., ¶ 84.)

24 Accordingly, the term “ $U(nT)$ ” should be construed as “a waveform within a
 25 set of discrete-time, pseudorandom, non-cyclostationary, and orthogonal and/or
 26 orthonormal waveforms that define a waveform alphabet.” (Acampora Decl.,
 27 ¶¶ 123-24.)

B. Claim Terms in the ‘940 and ‘169 Patents

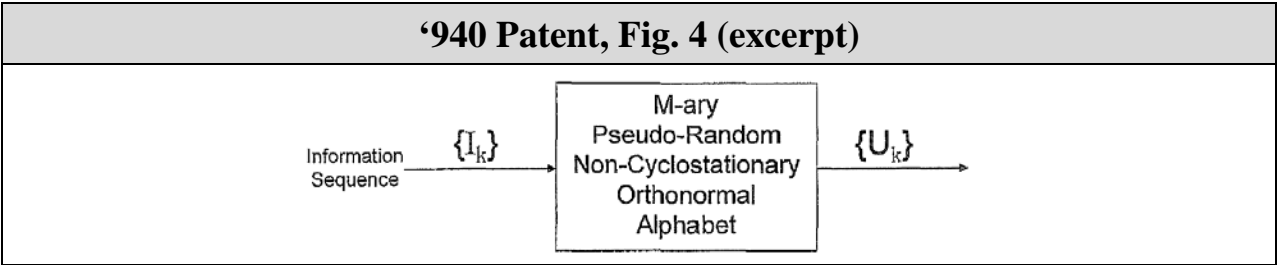
1. “mapping by the processor the information symbol sequence $\{I_k\}$ into a waveform sequence $\{U_k(nT)\}$ ” and related terms (Terms 19-24, with Terms 25-26)

a. Terms 19-24

Defendants’ Construction (e.g., Term 19)	Plaintiff’s Construction (e.g., Term 19)
“assigning by the processor each symbol in a symbol sequence $\{I_k\}$ to a corresponding one of M waveforms of the waveform alphabet $\{U_1(nT), \dots, U_M(nT)\}$ in sequence”	Plain meaning

The “mapping” limitations in Terms 19-24 use coined terms like “ $\{I_k\}$ ” and “ $\{U_k(nT)\}$ ” that do not have plain and ordinary meanings. (Acampora Decl., ¶¶ 127-28, 131.) Their meanings must be discerned from the intrinsic evidence.

Terms 19-24 recite how the patents’ signaling alphabet is used, “mapping” each information symbol onto one of the M elements of the signaling alphabet to create a sequence of waveforms. (Acampora Decl., ¶¶ 126-36.) Figure 4 shows that the transmitter takes a sequence of information symbols as inputs ($\{I_k\}$) and then uses the patents’ signaling alphabet (the allegedly inventive M -ary Pseudo-Random Non-Cyclostationary Orthonormal Alphabet) to output a sequence of waveforms ($\{U_k\}$) that corresponds to the information symbols. The patents’ text corresponding to Figure 4 provides an example of the claimed mapping in which the second information symbol (I_2) is mapped onto the second waveform ($U_2(nT)$) from the signaling alphabet at time k : “if $I_k=I_2$, then during the k^{th} signaling interval the waveform $U_2(nT)$ may be transmitted.” (‘940 patent, 5:58-59, 7:27-36.)



Odyssey cites no evidence that would allow it to evade the one-to-one mapping between information symbols and elements of the signaling alphabet. Rather, Odyssey relies on the same passages supporting Defendants' construction. (Dkt. 144, Ex. A at 52 (citing '940 patent, 5:48-60, 7:27-36, Fig. 7).) Odyssey also cites an additional passage stating that the "ordering or indexing of the alphabet elements" can change. ('940 patent, 5:65-6:10.) But that passage still requires an "unambiguous mapping" between the M information symbols and the M waveforms in the signaling alphabet. (*Id.*; Acampora Decl., ¶¶ 133-34.)

In addition, Terms 22-24 are apparatus claims reciting "processor configured to ..." language that should be construed as a means-plus-function limitation. The Federal Circuit recently reiterated that a claim term "can operate as a substitute for 'means' in the context of § 112, para. 6" where it provides only "a generic description for software or hardware that performs a specified function." *Williamson v. Citrix Online*, 792 F.3d 1339, 1349-50 (Fed. Cir. 2015) (en banc). Under *Williamson*, if the claim term does not denote a "sufficiently definite" structure for performing the function, it should be construed under § 112, ¶ 6. *Id.* at 1348. As the Federal Circuit has held in many cases, a "general purpose computer or microprocessor" is not a sufficiently definite structure for performing a specific function recited in the claims. *E.g.*, *Aristocrat Techs. v. Int'l Game Tech.*, 521 F.3d 1328, 1333-38 (Fed. Cir. 2008) (finding claims indefinite where specification disclosed only a general purpose processor); *Williamson*, 792 F.3d at 1352 (citing *Aristocrat*, 521 F.3d at 1333). Instead, the specification must disclose the algorithm performed by the processor, and the claim scope is limited to that algorithm. *Aristocrat*, 521 F.3d at 1333-38. In short, a patentee cannot escape the provisions of § 112, ¶ 6 by electing to use a generic reference to a "processor" rather than the word "means" in the claim.

Here, the claimed "processor configured to ..." is merely a generic "black box recitation," not sufficiently definite structure. *Williamson*, 792 F.3d at 1350; *Media*

Rights Techs. v. Capital One, 800 F.3d 1366, 1373-75 (Fed. Cir. 2015) (“compliance mechanism” did not connote structure). Accordingly, the term should be construed as a means-plus-function limitation, with the corresponding algorithm in the specification being the function recited in Defendants’ construction. (*See* ‘940 patent, 5:51-60, 11:3-11; Acampora Decl., ¶ 136.)

In sum, under either a *Phillips* analysis or pursuant to means-plus-function authority, the Court should adopt Defendants’ constructions for Terms 19-24.

b. Terms 25-26

In addition, resolving the dispute regarding the scope of $U(nT)$ and the mapping terms also resolves the dispute over Term 25 relating to the “waveform sequence $\{U_k(nT)\}$,” a similarly coined term. In short, the claims and specification show that the signaling alphabet consists of pseudo-random, non-cyclostationary, and orthonormal waveforms. The waveform sequence $\{U_k(nT)\}$ must also have the characteristics, because it is built from the waveforms in the alphabet. (Acampora Decl., ¶ 138.)

The same analysis holds true for Term 26, “waveform sequence $\{U_j(iT)\}$,” which refers to the waveform received by the receiver. (Acampora Decl., ¶¶ 139-41.) The waveform sequence $\{U_j(iT)\}$ has the same discrete-time, pseudo-random, non-cyclostationary, and orthonormal properties as $\{U_k(nT)\}$, and thus Defendants’ construction should be adopted. (*Id.*)

2. “waveform alphabet” (Term 27)

Defendants’ Construction	Plaintiff’s Construction
“a set of discrete-time, pseudo-random, non-cyclostationary, and orthogonal and/or orthonormal waveforms”	Odyssey maintains that no construction is necessary for this term. This claim term should be afforded its plain and ordinary meaning. However, should the Court decide to construe this term, then Odyssey proposes the following construction: set of waveforms

This term also raises the parties' dispute regarding the characteristics of the patents' signaling alphabet. As with the other terms discussed above, Odyssey's position improperly seeks to read out the characteristics of the patents' waveform alphabet that allegedly distinguished it from the prior art. (*See supra* § III.A; '169 patent, 4:34-44; '393 patent, 29:67-30:4, 30:45-47; Acampora Decl., ¶¶ 142-45.)

Claim 5 of the '940 patent recites "correlating the waveform sequence $\{U_k(nT)\}$ that is received by the receiver with a plurality of elements of a waveform alphabet." As the received sequence of signals $\{U_k(nT)\}$ consists of pseudo-random, non-cyclostationary, and orthonormal waveforms, the receiver's waveform alphabet also necessarily has those features. (Acampora Decl., ¶ 143.) The claim context further supports Defendants' construction. *Phillips*, 415 F.3d at 1314.

In the alternative, Odyssey proposes construing the term as a "set of waveforms." Odyssey's alternative construction reads out not only the allegedly inventive characteristics of its waveform alphabet, but also the term "alphabet" entirely. An alphabet is a standardized set of elements that each correspond to a specific information symbol. (*See supra* § III.A; Acampora Decl., ¶ 144.) An alphabet does not cover all possible sets of elements. (Acampora Decl., ¶ 144.)

Accordingly, the Court should adopt Defendants' construction.

3. "radiating by the transmit antenna the baseband waveform sequence $\{U_k(nT)\}$ " and related terms (Terms 28-30)

Defendants' Construction (e.g., Term 28)	Plaintiff's Construction (e.g., Term 28)
"directly transmitting the baseband waveform sequence $\{U_k(nT)\}$ without up-conversion"	Odyssey maintains that no construction is necessary for this term. This claim term should be afforded its plain and ordinary meaning. However, should the Court decide to construe this term, then Odyssey proposes the following construction: "transmitting the baseband waveform sequence $\{U_k(nT)\}$ "

1 Term 28 expressly requires “*radiating ... the baseband waveform sequence.*”
 2 Yet Odyssey argues that the claim is so broad that it also encompasses radiating
 3 waveforms at frequencies much higher than the baseband frequency.

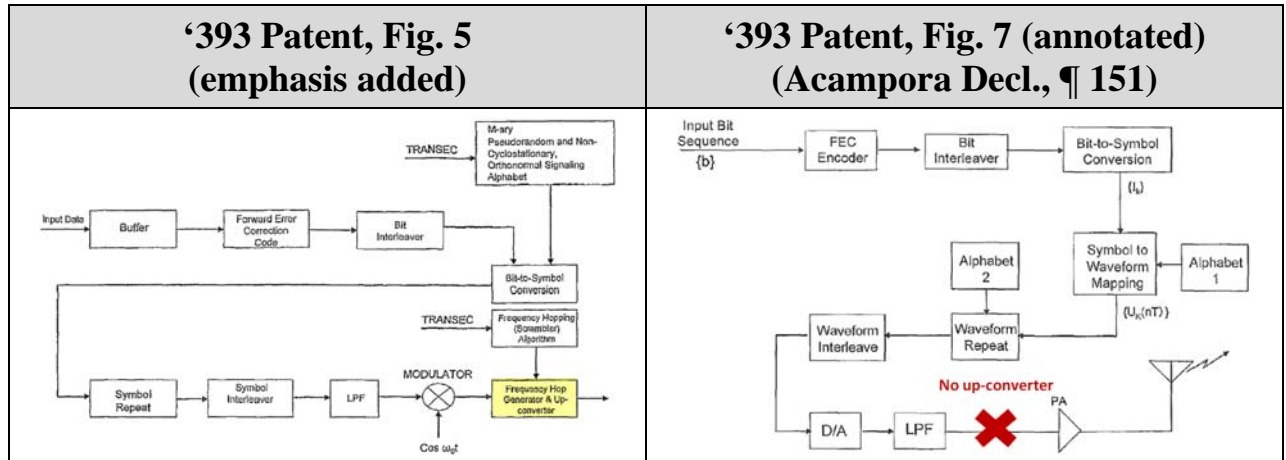
4 “Baseband” has a well-established meaning in the field. (Acampora Decl.,
 5 ¶¶ 147-49.) Before transmission in conventional wireless systems, signals are often
 6 “up-converted” from the “baseband” frequency, which is centered around zero, to a
 7 higher frequency called the “carrier” frequency. (*Id.*) Among other things, up-
 8 conversion allows signals to be sent on different channels by using carriers with
 9 different frequencies. (*Id.*) Once a signal is up-converted, it is no longer
 10 considered a baseband signal by a person of skill in the art. (*Id.*)

11 The claim language for Term 28 requires “radiating ... the baseband
 12 waveform sequence” from the transmit antenna. Odyssey’s proposal conflicts with
 13 the claim language, expanding the claim scope to cover devices that do not radiate
 14 baseband waveform sequences but instead radiate up-converted, high-frequency
 15 waveform sequences.

16 The written descriptions also support Defendants’ construction. The patents
 17 include two alternative methods of transmission: (1) a method that includes up-
 18 conversion from the baseband frequency and (2) a “direct synthesis” method that
 19 excludes up-conversion and thus transmits the baseband waveform sequences.
 20 (‘169 patent, abstract, 2:16-17; Acampora Decl., ¶¶ 150-56.) The up-conversion
 21 method is shown in Figure 5, including the block labeled “Frequency Hop
 22 Generator and Up-converter.” (‘169 patent, Fig. 5; *id.*, Fig. 6 (receiver with inverse
 23 “Down-Converter” circuitry).) Figure 7 shows the direct synthesis method, which
 24 sends the signal at the baseband frequency without any up-conversion block:

25 It will be appreciated that the transmitter embodiment of
 26 FIG. 7 illustrates a “direct synthesis” transmitter in that
 27 *the transmitter directly synthesizes a transmitted*
 28 *waveform, without resorting to up-conversion and/or*
carrier modulation.

(*Id.*, 8:21-25 (emphasis added); *id.*, Fig. 9 (receiver without down-converter).)



Odyssey further distinguished between the direct synthesis and up-conversion methods, asserting that the direct synthesis method “may further enhance the LPI/LPD/LPE feature(s) of a communications system,” the primary goal of the patents. (*Id.*, 8:25-27.) Odyssey explained in its proposals that up-conversion can be undesirable for covert communications:

EMISSIONS DEVOID OF CARRIER MODULATION: ... [T]he XG-CSS waveform may be radiated by directly radiating the alphabet elements, without relying on carrier modulation and upconversion. Such a direct RF synthesis avoids radiating a double sideband carrier with correlated signal attractors between the upper and lower sidebands thereof, as would be the case by first forming the alphabet at baseband, followed by up-conversion.

(Ex. 15 at ODY0003059 (emphasis in original); *id.* at ODY003053 (transmitting at baseband may “preclud[e] correlation detection between carrier sideband”); Ex. 16 at ODY003643-44 (“The transmitter ... is a ‘direct synthesis’ transmitter in that it directly synthesizes (*at baseband*) the transmitted waveform, without resorting to up-conversion and/or carrier modulation.”) (emphasis added).)

Despite using the word “baseband” in its proposed alternative construction, Odyssey seeks to cover not only direct synthesis systems that transmit at baseband but also systems that use up-conversion to transmit at higher carrier frequencies.

Pointing to the two embodiments discussed above, Odyssey argues that, “[i]f Defendants’ proposal is adopted, the resulting claim construction would limit the scope of the invention to a single embodiment.” (Dkt. 144, Ex. A at 72.) As the Federal Circuit has made clear: “It is often the case that different claims are directed to and cover different disclosed embodiments. The patentee chooses the language and accordingly the scope of the claims.” *Helmsderfer v. Bobrick Washroom Equip.*, 527 F.3d 1379, 1383-84 (Fed. Cir. 2008); *August Tech. v. Camtek*, 655 F.3d 1278, 1285-86 (Fed. Cir. 2011). Here, these terms expressly require “*radiating ... the baseband waveform sequence*” and thus are limited to the direct synthesis embodiment, *i.e.*, transmitting at baseband (without up-conversion).

C. Claim Terms in the ‘393, ‘837, ‘606, and ‘230 Patents

1. “a processor that is configured [1] to provide a frequency content for a waveform by Fourier transforming a signal, [2] to form a desired spectrum shape for the waveform, that differs from the frequency content, responsive to the frequency and [3] to generate the waveform by inverse Fourier transforming the desired spectrum shape” and related terms (Terms 8-9, with Terms 1-3, 15-18)

Defendants’ Construction (<i>e.g.</i> , Term 8)	Plaintiff’s Construction (<i>e.g.</i> , Term 8)
<p>“a processor that is configured (1) to identify the frequency content being radiated by other transmitters by subjecting the desired band of frequencies to a Fourier transform, (2) to form a water-filled spectrum shape, and (3) to create a waveform that is one of a set of pseudo-random, non-cyclostationary, and orthogonal and/or orthonormal waveforms by inverse Fourier transforming the desired spectrum shape”</p> <p>In the alternative: Means-plus-function</p> <p>Function: See proposed construction above</p> <p>Structure: Circuitry of Fig. 17, including: Power Spectrum Estimator (Fig. 17) to identify frequency content radiated by other transmitters, Water Filling Spectrum Shaper (WFSS), IFFT, Uniformly Distributed</p>	Plain meaning

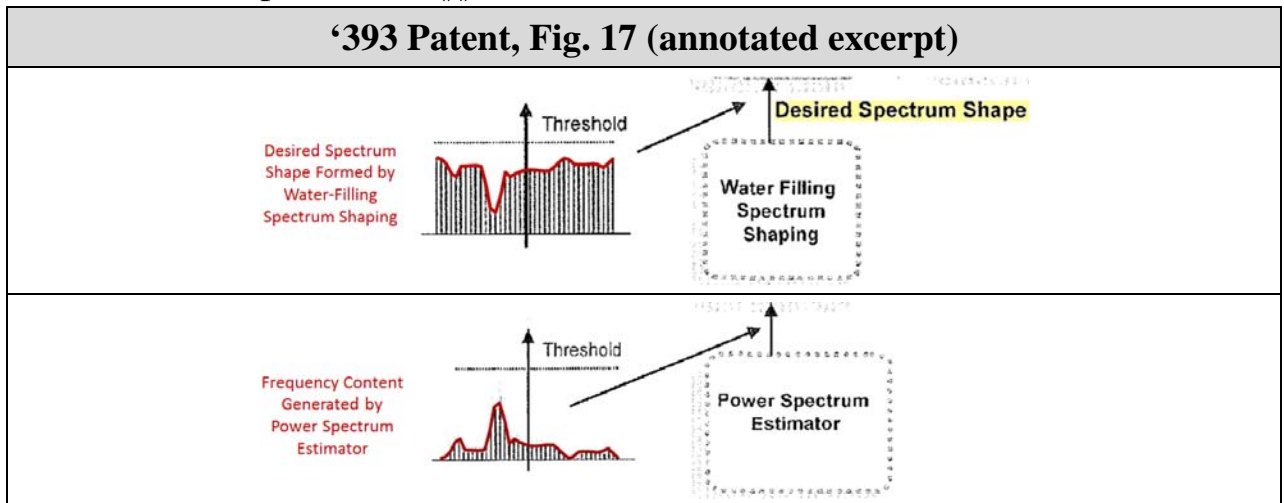
1 Random Phase Generator, and Gram-Schmidt	
2 Orthonormalizer, connected as in Fig. 17	

3 For these terms, Odyssey’s “plain meaning” construction would improperly
 4 avoid resolving the parties’ dispute over claim scope until trial and, at its core,
 5 seeks to expand the claim scope far beyond the alleged invention described in the
 6 patents and recited in the claims. As described above, the Federal Circuit has made
 7 clear that construction is required “when reliance on a term’s ‘ordinary’ meaning
 8 does not resolve the parties’ dispute.” *O2 Micro*, 521 F.3d at 1361. Moreover, a
 9 plain meaning construction may not be used to “divorce[]” the claim scope “from
 10 what the specification conveys is the invention.” *Retractable*, 653 F.3d at 1305.

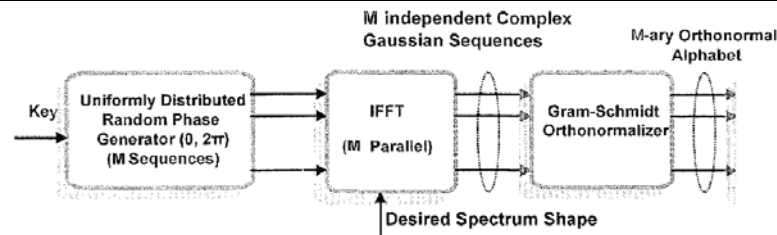
11 These claims relate to the water-filling method of creating the patents’
 12 signaling alphabet described in the ‘393 and ‘606 patents. (Acampora Decl.,
 13 ¶¶ 158-76.) The method performs three steps. First, the method requires
 14 investigating the power radiated by other transmitters over the range of the
 15 frequencies the transmitter wishes to transmit on. (‘393 patent, 30:5-44.) Closely
 16 following the claim language (“provide a frequency content”), the written
 17 description addressing the water-filling method describes how the Power Spectrum
 18 Estimator estimates the “frequency content being radiated by other transmitters.”
 19 (*Id.*, 30:5-44.) In other words, the Power Spectrum Estimator samples the existing
 20 signals within a specified frequency range and provides the power level at each
 21 frequency. (*Id.*, Fig. 17; Acampora Decl., ¶¶ 165-67.)

22 Second, using interference level data from the Power Spectrum Estimator,
 23 the Water-Filling Spectrum Shaping step forms the desired spectrum shape. Again,
 24 closely following the claim language (forming a “desired spectrum shape” that is
 25 “responsive to the frequency” content), the specification describes how water filling
 26 forms a “Desired Spectrum Shape” that is “[r]esponsive to the output of the PSE
 27 [Power Spectrum Estimator].” (‘393 patent, Fig. 17, 30:5-44.)

Figure 17 includes power spectral density diagrams showing how the desired spectrum shape is responsive to the measured frequency content. As depicted below, the transmission power of the desired spectrum shape is high in frequency “bins” where the measured interfering frequency content is low, and the transmission power is low in frequency bins where the measured frequency content is high. Thus, the desired spectrum shape is generally the inverse of the frequency content. (Acampora Decl., ¶¶ 168-71.)



Third, the transmitter “generates the waveform” for the signaling alphabet. As detailed above, the patents’ alleged invention uses waveforms with pseudo-random, non-cyclostationary, and orthonormal characteristics. Figure 17 shows three blocks used in generating waveforms with those characteristics: the first block generates M sequences of pseudo-random phase values; the second block combines those sequences with M copies of the desired spectrum shape and converts the frequency-domain signals into non-cyclostationary time-domain waveforms using an Inverse Fast Fourier Transform; and the third block orthonormalizes the set of waveforms using a Gram-Schmidt Orthonormalizer. (‘393 patent, Fig. 17, 30:5-44; Acampora Decl., ¶¶ 172-75.)

‘393 Patent, Fig. 17 (excerpt) (Acampora Decl., ¶ 172)

The prosecution history also contradicts Odyssey’s efforts to use a “plain meaning” construction to expand the claim scope beyond the alleged invention disclosed in the ‘393 and ‘606 patents. (Acampora Decl., ¶¶ 177-84.) While prosecuting a parent to the patents-in-suit, EICES acknowledged that a mathematical operation called an “Inverse Fast Fourier Transform” (“IFFT”) is used both in the creation of its signaling alphabet and in prior art OFDM systems. Distinguishing the alleged invention from OFDM, EICES emphasized that OFDM’s use of that mathematical operation “has *nothing to do* with the formation of a communications alphabet” but instead “has to do with the modulation of the data bits onto OFDM subcarriers.” (‘354 File History, ODY_DEFS_00000958 (emphasis added).) It likewise argued that any orthogonalizing performed in OFDM “has *nothing to do* with orthogonalizing random signals to create elements/symbols of a communications alphabet” and that any improvement to the modulation efficiency of OFDM systems “has *nothing to do* with forming a communications alphabet.” (*Id.* at ODY_DEFS_00000956, 958 (emphasis added).) Odyssey’s “plain meaning” construction improperly seeks to expand the claim scope to accuse the same OFDM operations it distinguished during prosecution.

Finally, Terms 8 and 9 use a “processor configured to ...” formulation. For the reasons given above for the “mapping” terms, the “processor configured to ...” language should be given means-plus-function treatment. As a result, Defendants have provided an alternative means-plus-function construction, which construes the function as described above and construes the structure as the blocks from Figure

17 discussed above. (Acampora Decl., ¶ 185.)

The same analysis applies to other closely related terms. Terms 1-3 arise from the ‘393 and ‘606 patents, with Terms 1 and 2 using almost identical language to the first function discussed above for Term 8, and Term 3 using almost identical language to the second function.⁸ (Acampora Decl., ¶¶ 186-91.) Similarly, Terms 15-18 from all the patents-in-suit recite nearly identical language to the third function discussed above for Term 8.⁹ (Acampora Decl., ¶¶ 208-10.) Accordingly, Terms 1-3 and 15-18 should be given the same construction as Terms 8 and 9 for the reasons provided above.

2. Spectrum-shaping terms in the ‘230 and ‘837 patents

a. ‘230 patent: “forming at baseband a desired spectrum shape” and related terms (Terms 4, 10)

Defendants’ Construction (<i>e.g.</i> , Term 4)	Plaintiff’s Construction (<i>e.g.</i> , Term 4)
“forming at baseband a water-filled spectrum shape or a power spectral density over a range of frequencies that substantially excludes certain frequency intervals in that range from providing frequency content”	Plain meaning

As with the terms addressed above, Odyssey’s “plain meaning” construction seeks to expand the claim scope much broader than can be supported by the alleged inventions in the specification.

Terms 4 and 10 from the ‘230 patent relate to the second function discussed

⁸ Compare Term 1 (“providing a frequency content for a waveform by Fourier transforming a signal”), with Term 8 (“provide a frequency content for a waveform by Fourier transforming a signal”); compare Term 3 (“forming a desired spectrum shape for the waveform, that differs from the frequency content, responsive to the frequency content”), with Term 8 (“to form a desired shape for the waveform, that differs from the frequency content, responsive to the frequency”).

⁹ Compare, *e.g.*, Term 8 (“to generate the waveform by inverse Fourier transforming the desired spectrum shape”), with Term 15 (“generating the waveform by inverse Fourier transforming the desired spectrum shape”).

1 above for Terms 8 and 9 of the ‘393 and ‘606 patents. The claims of the ‘230
 2 patent, however, use different language from Terms 8 and 9. The ‘230 claims first
 3 remove the step requiring the transmitter to measure the interference from other
 4 transmitters by “providing a frequency content for a waveform by Fourier
 5 transforming a signal.” Next, the ‘230 claims require forming a desired spectrum
 6 shape, but remove the requirement that the desired spectrum shape be different
 7 from, but responsive to, the measured frequency content of the interference.

8 Odyssey’s proposed “plain meaning” construction seeks to enlarge the claim
 9 scope to cover any type of spectrum shaping, but the ‘230 specification does not
 10 support claim scope that broad.¹⁰ (Acampora Decl., ¶¶ 193-98.) In addition to the
 11 Figure 17 water-filling method discussed above, the ‘230 patent includes Figure 8
 12 and a few lines of text. Figure 8 shows “a schematic illustration of spectrum used
 13 by a transmitter.”¹¹ (‘230 patent, 16:15-17.) The upper figure depicts “a power
 14 spectral density of a broadband waveform defining the M-ary non-cyclostationary
 15 orthonormal alphabet.” (*Id.*, 24:58-65.) The bottom figure (the “second trace”)
 16 shows a spectrum shape where two frequency intervals have been “substantially
 17 excluded” to address known interference, such as from GPS signals:

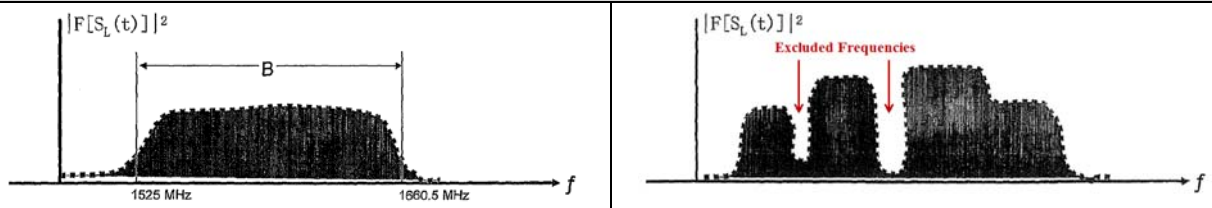
18 As is further illustrated in FIG. 8 (second trace), certain
 19 frequency intervals that warrant protection (or additional
 20 protection) from interference, such as, for example, a GPS
 21 frequency interval, may be substantially excluded from
 22 providing frequency content for the generation of the
 23 M-ary non-cyclostationary orthonormal alphabets.

(‘837 patent, 25:5-11.)¹²

24 ¹⁰ *Netword v. Centraal*, 242 F.3d 1347, 1352 (Fed. Cir. 2001) (“The claims are
 25 directed to the invention that is described in the specification; they do not have
 26 meaning removed from the context from which they arose.”).

27 ¹¹ The ‘230 patent also discusses the term “spectrum” in describing the spread-
 28 spectrum techniques in the prior art. (*E.g.*, ‘230 patent, 2:1-21.)

¹² While both Figures 8 and 17 form a desired spectrum shape, only Figure 17
 forms a spectrum shape that is responsive to the frequency content. Figure 8

‘230 Patent, Fig. 8 (annotated) (Acampora Decl., ¶ 196)

Based on the specification, the claim scope should be consistent with the Figure 17 water-filling and Figure 8 power-spectral-density disclosures.

Finally, apparatus Term 10 uses the “processor configured to ...” formulation and thus should be given means-plus-function treatment for the reasons discussed above. Applying means-plus-function law to Term 10 properly limits the claim scope to the water-filling method disclosed in Figure 17, because the ‘230 patent does not describe any structure for performing the power-spectral-density shaping from Figure 8. (Acampora Decl., ¶¶ 199-200.)

b. ‘837 patent: “forming a desired spectrum shape for a waveform” and related terms (Terms 6, 12)

Defendants’ Construction (<i>e.g.</i> , Term 6)	Plaintiff’s Construction (<i>e.g.</i> , Term 6)
“forming a power spectral density over a range of frequencies that substantially excludes certain frequency intervals from providing frequency content”	Plain meaning

For this term, Odyssey again seeks a “plain meaning” construction to enlarge the claim scope beyond the invention described in the patent. The ‘837 patent includes shaping language similar to the ‘230 terms discussed above. A key

instead shapes the spectrum by excising known interfering frequencies, such as GPS, without any measurements. Figure 8 thus lacks the responsiveness critical to water-filling and required by the ‘393 and ‘606 claims. In addition, the ‘230 patent does not describe how the transmitter is supposed to exclude those frequencies in the context of its alleged invention (the ‘393 and ‘606 patents teach using a Fourier transform for the step of providing a frequency content) or enable such a transmitter; it just asserts that the frequencies could be excluded. (Acampora Decl., ¶ 197.)

1 difference between the ‘837 and ‘230 patents, however, is that Odyssey expressly
 2 and intentionally did not include the Figure 17 water-filling disclosure in the
 3 ‘837 patent.¹³ (Acampora Decl., ¶¶ 202-06, Ex. A (‘837 File History).)

4 Here, forming a spectrum shape by excluding frequencies from the power
 5 spectral density as in Figure 8 is not just a preferred embodiment, it is the
 6 ‘837 patent’s only embodiment of the claim term. *Abbott Labs.*, 566 F.3d at 1289
 7 (construing claim scope to include the only disclosed embodiment); *Respironics v.*
 8 *Invacare*, 303 F. App’x 865, 870 (Fed. Cir. 2008) (affirming claim construction that
 9 limited claim scope to the “only one way” disclosed of achieving the claimed
 10 functionality).

11 Accordingly, the proper construction of this term is “forming a power
 12 spectral density over a range of frequencies that substantially excludes certain
 13 frequency intervals from providing frequency content.” In addition, Term 12 uses
 14 the “processor that is configured to ...” format and thus invokes means-plus-
 15 function case law. Because the ‘837 patent does not provide any structure for
 16 performing the functions of the Figure 8 method, the claims including Term 12 are
 17 indefinite. (Acampora Decl., ¶ 205.)

18 **3. “selecting a frequency interval over which a waveform**
 19 **U(nT) is to exist; wherein n denotes a discrete time index**
 20 **and wherein n=1, 2, ... , N; allowing at least one frequency**
 21 **that is included in the selected frequency interval to provide**
 22 **a frequency content to the waveform U(nT); excluding at**
 23 **least one frequency that is included in the selected frequency**

24 ¹³ None of the passages cited by Odyssey for forming a waveform apply to forming
 25 a desired spectrum shape. (E.g., ‘837 patent, 4:19-20, 6:26-27, 9:48-50, 11:61-62,
 26 20:14-21.) The disputed claim limitation, “forming a desired spectrum shape for a
 27 waveform,” also includes the term “waveform.” However, here, the term
 28 “waveform” is used as a qualifier for the term “spectrum shape.” It is a “well-
 established rule that claims are interpreted with an eye toward giving effect to all
 terms in the claim.” *Digital-Vending Servs. Int’l v. Univ. of Phoenix*, 672 F.3d
 1270, 1275 (Fed. Cir. 2012) (internal quotation omitted). Thus, forming a spectrum
 shape is not the same as forming a waveform.

interval from providing a frequency content to the waveform $U(nT)$; forming the waveform $U(nT)$ comprising a plurality of elements $U(T)$, $U(2T)$, ... , $U(NT)$, corresponding to respective integer values 1, 2, ... , N of the discrete time index n ” and related terms (Terms 5, 7)

Defendants’ Construction (<i>e.g.</i> , Term 7)	Plaintiff’s Construction (<i>e.g.</i> , Term 7)
“determining the frequencies over which a waveform in a set of pseudo-random, non-cyclostationary waveforms will have content by creating a power spectral density over a frequency interval that substantially excludes certain frequency intervals from providing frequency content”	Plain meaning

Term 7 appears in claim 17 and 22 of the ‘837 patent.¹⁴ Plaintiff’s proposed “plain meaning” construction does nothing to explain *how* the claimed selecting, allowing, excluding, and forming are accomplished. It would not resolve the parties’ dispute but would instead improperly shift to the jury the question of the term’s meaning. *O2 Micro*, 521 F. 3d at 1360. Defendants’ construction provides the necessary clarity for the Court and jury. (Acampora Decl., ¶¶ 212-16.)

This term relates to creating “a power spectral density” for “ $U(nT)$,” which is the waveform “defining the M-ary non-cyclostationary, orthonormal alphabet,” as discussed above. (‘837 patent, 23:55-58, 3:48-49, 5:56-57, 9:7-8, 11:24-25 (equating “frequency content” to “power spectral density”).) The ‘837 patent shows only one way to perform the claimed functions: providing frequency content to $U(nT)$ by creating a power spectral density and “excluding at least one frequency that is included in the selected frequency interval.” (*Id.*, 23:55-24:6.)

As detailed above, only Figure 8 discloses creating and then limiting a power

¹⁴ This term is similar to Term 5, which appears in the ‘230 patent. The specifications of the ‘837 and ‘230 patents, however, differ because the ‘230 patent includes disclosure of a water-filling technique not included in the ‘837 patent (*see supra* § III.C.2.a), which accounts for the difference between Defendants’ construction of Term 5 as compared to Term 7.

1 spectral density. The top of Figure 8 illustrates that a waveform can “exist” in a
 2 power spectrum. (*Id.*, 23:55-60.) The bottom of Fig. 8 shows the power spectrum
 3 excluding two frequency ranges in the selected frequency interval. (*See supra*
 4 § III.C.2.a (Fig. 8 (annotated)).) “As is further illustrated in FIG. 8 (second trace),
 5 *certain frequency intervals* that warrant protection (or additional protection) from
 6 interference, such as, for example, a GPS frequency interval, *may be substantially*
 7 *excluded from providing frequency content* for the generation of the M-ary non-
 8 cyclostationary orthonormal alphabets.” (‘837 patent, 23:67-24:6 (emphasis
 9 added).) The claim term mirrors this description nearly identically.

10 The prosecution history confirms Defendants’ construction.
 11 EICES represented that the ‘837 patent claims were supported by Figure 8 and the
 12 exact section of the specification relied upon by Defendants. (‘837 File History,
 13 ODY0000259.) EICES cited no other sections and made no other arguments.

14 Odyssey’s additional citations to the specification add nothing to the analysis
 15 of this term. Therefore, the Court should adopt Defendants’ construction since it is
 16 the only one supported by the intrinsic evidence in this case. Term 7 should be
 17 construed as “determining the frequencies over which a waveform in a set of
 18 pseudo-random, non-cyclostationary waveforms will have content by creating a
 19 power spectral density over a frequency interval that substantially excludes certain
 20 frequency intervals from providing frequency content.”

21 **IV. CONCLUSION**

22 For the reasons above, Defendants respectfully request that the Court adopt
 23 their proposed constructions.
 24
 25
 26
 27
 28

1 Dated: February 25, 2016

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LG Electronics Mobilecomm U.S.A., Inc.

CERTIFICATE OF SERVICE

The undersigned certifies that counsel of record who are deemed to have consented to electronic service are being served on February 25, 2016, with a copy of this document via the Court's CM/ECF system per Local Rules. Any other counsel will be served by electronic means, facsimile, overnight delivery and/or first class mail on this date.

By: /s/ Timothy S. Teter